HISTORIC DISTRICTS

Multi-Zone System

New Sound System Installed to Improve Downtown

NEWAYGO

Newaygo, MI

The Challenge

- Provide year-round sound outdoors for a town of about 620 households
- Sound system must withstand colder than normal temperatures, higher than normal wind speeds and an average of 28 inches of snow in December and January
- Allow crew with limited sound experience to easily install and connect audio equipment
- Install sound system so that any of three zones can receive music, announcements and paging
- Ensure uniform sound throughout the zones

The Solution

Located about 150 miles northwest of Detroit and about 30 miles east of Lake Michigan, Newaygo, MI, lies along the banks of the Muskegon River. The town's modern history began when French explorers and trappers paddled up the river in the mid-1700s.

Newaygo decided to install an audio system in its 2-square mile area to encourage tourists to visit its downtown merchants. "The sound system positions the town to attract tourists coming north," according to Brad Hummel, Foreman for Nieboer Electric, Fremont, MI, who supervised installation.

Residents wanted announcements for local annual events, which include eight parades, outdoor concerts, farmers' markets in the summer as well as music during the holidays. Years ago, town employees would have had to install speakers in the spring and detach them in the fall to prevent damage to outdoor equipment. Bogen's NEAR speakers can be installed outdoors year-round without damage to the speaker cabinets, mounting hardware nor inner workings of the speaker.

The city of Newaygo wanted three zones for flexibility. The zones include the Main Street, the upper parking lot and the lower parking lot. The bandstand is in the southern upper parking lot and the farmers' markets are located in the northern lower parking lot. By having three zones, suitable music and messages can be directed to a specific zone. The Main Street zone serves well for parades and the Annual Log Fest. The Main Street zone is about 2,200 feet long and 60 feet wide (both sides of the street). The parking lot zones are roughly square, about 250,000 square feet.

System Components

One Bogen M-Class Power Amplifier (M300) was selected for the Main Street Zone. Two M-Class Power Amplifiers (M450) were selected for the upper parking lot zone and a third unit (M450) is used for the lower parking lot. The M-Class amplifiers can be set for any of three modes of operation: stereo, 70V mono or dual mono. For this installation, 70V mono mode was selected because of the large quantity of speakers in the system and the power required to run them, as well as the long distances of the wire runs.

The sound system equipment of main components is allocated as follows:

Zone 1 (Main Street)

- 56 NEAR® A-Series Speakers in black (A2TBLK)
- 1 Bogen M-Class Power Amplifier (M300)
- 1 Bogen Gold Seal Series (GS35)

Zone 2 (Upper Parking Lot)

- 38 NEAR A-Series Speakers in black (A8TBLK)
- 2 Bogen M-Class Power Amplifiers (M450)
- 1 Bogen Gold Seal Series (GS35)

Zone 3 (Lower Parking Lot)

- 20 NEAR A-Series Speakers in black (A8TBLK)
- 1 Bogen M-Class Power Amplifier (M450)
- 1 Bogen Gold Seal Series (GS35)

BOGEN®

Product Highlights

The Results

"The speakers work very well," said a city official. "The sound exceeded my expectations and is unbelievable," said Hummel. When Kerry Rose, Telecommunications Marketing Manager for Kendall Electric, and Dave DeYoung, Telecommunications Sales Specialist of Fitzpatrick Electric, were setting the levels for the different zones in Newaygo using a Bonnie Raitt Live CD, they were most favorably impressed with the speaker's clarity. The sound was so lifelike that "one young mom asked if there was a concert happening nearby," noted DeYoung. "I was impressed by the clarity," he added.

The city official also commented that there are two old dams upstream of the town and the sound system could be used to notify the public of a potential emergency situation and send out directives. The sound system can be used in addition to three sirens.

"The merchants love the sound system, especially for the Shopping Week event," said the city official. "It helps them create a more friendly atmosphere for shoppers," he noted. The town of Newaygo is so pleased with the sound that a group responsible for the Fairgrounds in Newaygo County is considering installing a Bogen system there, according to Jeff Skodack, Account Manager for Fitzpatrick Electric, Muskegon, MI.

Speakers

The Main Street zone relies on 56 NEAR A-Series Loudspeakers (A2TBLK). 38 NEAR A-Series Loudspeakers (A8TBLK) were selected for the upper parking lot and 20 of the same type of speakers were chosen for the lower parking lot. In the parking lots, the NEAR A-Series Speakers in black (A8TBLK) are tapped to 32 watts with 64-watt capability while in the Main Street zone, the NEAR A-Series Speakers in black (A2TBLK) are tapped to 8 watts with 16-watt capability.

Amplifiers

Each of the three zones in the installation is amplified by Bogen M-Class Power Amplifiers.

One of these amplifiers (M300) is used in the Main Street zone. Three amplifiers (M450) were selected for the parking lots. These amplifiers are located in city hall and power the speakers.

To adjust and control music in the system, each zone has a Gold Seal Series (GS35) with a dual-function, 10-band graphic equalizer that divides the signal into frequency bands and applies a gain on them to produce accurate intelligible sound. In addition, when a live band plays, the Gold Seal Series eliminates feedback from the microphone.

Zone Controller

A Bogen Paging System (PCM2000) provides three paging zone outputs. Thus, Newaygo has the flexibility it needs to offer various combinations of music, announcements and paging based on the event requirements and its location. The PCM2000 allows paging in any or all zones, and because of its modular design, it allows the system to be expanded at any time.

Planned and Easy Installation

Installation of 114 speakers took only about two-and-a-half weeks to three weeks, noted Skodack. He coordinated the project with Newaygo and the contractor, Nieboer Electric. The wires from the amplifiers run through underground conduits to speakers. The new sound system followed on the heels of a new lighting system and when it was installed, Nieboer Electric knew they'd install a sound system in phase two. Dual conduits for future wires for the sound system were installed 2.5 to 3 feet below the ground surface. From the conduits, the wires go up about 14 feet from where the conduit is located in the ground; 12 feet within the light pole above ground. These wire extend into every other light pole (about 40 feet apart) in three zones.

"Nearly 8,250 feet of wire were used to connect all of the speakers and other sound system components," said Hummel. "The speakers are mounted 12 feet up the poles and positioned so they emit sound in opposite directions," he added. Since the distance the sound signals must travel through the wires is great (over 1.5 miles), 70-volt technology was used. Despite the exceptionally long distances the wires run from the amplifiers to the speakers, the sound from the last speaker is just as sharp, clear and loud as the sound from the first speaker in the run. In addition, Bogen's equipment allows for the playing of music and announcements at suitable levels throughout the system as needed with appropriate muting, fade in and fade out.

Scott Ware, Regional Manager, Bogen Communications, shares credit for the success of this installation. He went to Newaygo, worked with many people including the end user, contractor and distribution contractors and installers, and ensured they received the specific sound equipment needed. "My job is to ensure the

Specifications

- 56 NEAR 16-watt A-Series Speakers in black (A2TBLK)
- 58 NEAR 64-watt A-Series Speakers in black (A8TBLK)
- 3 Bogen M-Class Power Amplifiers (M450)
- 1 Bogen M-Class Power Amplifier (M300)
- 1 Bogen Paging Control Module (PCM2000)
- 1 Bogen Rack Mounting Kit for the PCM2000 (RPK84)
- 1 Bogen AM/FM Receiver (TP30D)
- 1 Rack Mounting Kit for the TP30D (RPK46A)
- 1 Bogen CD Player (CDC3)
- 3 Bogen Gold Seal Series (GS35)
- 3 Bogen Rack Mounting Kits for the GS35 (GSRPK)

Key Products

NEAR® A-SERIES
Outdoor Loudspeakers

M-CLASS
Power Amplifiers

PCM2000
Paging Control System

GOLD SEAL SERIES

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CEILING SPEAKERS

High-Fidelity Ceiling Subwoofer

CSUB

The Bogen **CSUB Ceiling Subwoofer** delivers outstanding bass response in both suspended ceiling and sheetrock installations. The CSUB can provide deep, rich bass response to any speaker system. Perfect accompaniments to the CSUB are Bogen's HFSF1 and HFCS1/LP ceiling speakers, as well as NEAR's OCS1 ceiling loudspeaker.

The CSUB offers six levels of power output settings plus an 8-ohm position controlled via a front-mounted, rotary tap selector switch (under grille). The low-distortion speaker design, coupled with a computer-matched venting system, delivers exceptional low-frequency response for music. The mechanical CSUB design features four swing-out mounting clamps that eliminate the need for a separate tile bridge when used in suspended ceiling applications.

Product Features:

- Flat bass response down to 40 Hz
- Computer-matched venting system for full bass output
- 11" deep enclosure
- Integral swing-out mounting clamps eliminate need for tile bridge
- High power handling capability for foreground sound
- Selectable power taps via front-mounted control
- Power taps: 64, 32, 16, 8, 4, and 2 watts @ 70V
- 8-ohm selector position for low impedance systems
- Compound rubber surround for lasting performance
- Easy wiring with plug-in connector providing loop-through terminals
- Attachment point for seismic safety cable
- Input terminal cover with conduit knockout
- Attractive, contemporary, sturdy steel grille assembly with fine perforations
- Off-white, paintable finish
- TUV listed for USA and Canada

Accessories

CK10
10 ft. Cable Kit
(Silver)

Technical Specifications:

Impedance	Power Handling	Sensitivity	Frequency Response	Dimensions	Product Weight
8 Ω Nominal	150W (8 Ω)	91 dBspl @ 1W/1m	40 Hz -125 Hz	15-1/2" dia. x 11" D	19 lb.
70V Settings	64, 32, 16, 8, 4, 2W taps (70V)				

High-Fidelity Ceiling Speaker

HFSF1

The Bogen **HFSF1 High-Fidelity, Small-Footprint Ceiling Loudspeaker** delivers superior sound in a very compact enclosure. The speaker is unobtrusive at only 7-1/4" in diameter, and mounts easily in all types of ceilings including existing hard-surface types and suspended ceilings.

The low-distortion, coaxial-design speaker, coupled with a computer-matched venting system, delivers superb fidelity for music as well as high intelligibilty for voice reinforcement. Coupled with the Bogen CSUB Ceiling Subwoofer, it provides the perfect solution for environments that require the highest-quality sound with minimal visual impact.

Product Features:

- Superior sound in a very compact enclosure
- Wide-dispersion coaxial driver for broad, even coverage; superb off-axis response
- Small footprint, visually appealing
- Only 6-1/4" diameter ceiling opening required
- Installs in wide range of ceiling types
- For 70V and low-impedance systems
- Selectable power taps via control mounted under grille; 16, 8, 4, 2, 1 watts at 70V
- 16-ohm selector position for low-impedance systems
- Quick wiring with removable plug-in connector providing loop-through terminals
- Attachment point for seismic safety cable
- Input terminal cover with conduit knockout
- Compound rubber surround for lasting performance year after year
- Integral mounting clamps tighten quickly and firmly
- Tile bridge (TBSF) accessory recommended for suspended ceiling installations
- Off-white, paintable finish
- TUV listed for USA and Canada

Accessories

CK10
10 ft. Cable Kit
(Silver)

TBSF
Tile Bridge Support Ring

Technical Specifications:

Impedance	Power Handling	Sensitivity	Frequency Response	Dimensions	Product Weight
16 Ω Nominal	50W (16Ω)	86 dBspl @ 1W/1m	78 Hz - 20 kHz	7-1/4" dia. x 7-1/2" D	4.5 lb.
70V Settings	16, 8, 4, 2, 1W taps (70V)				